

the working man student is recommended by Prof. Perry to condense the essential facts of Euclid's "Geometry" into a few pages of careful instrumental construction, supplemented by perhaps half a page of Algebra for the fifth and sixth books, and introducing at the outset the circular functions of Trigonometry, and, most important of all, the ideas and sacred symbolism of the Calculus.

Valuable collections of examples are interspersed throughout the Lectures, all having a definite practical numerical character, or the interest of the practical illiterate mechanic would be lost; but we think the navigator would object to the units employed in Example 9, p. 113. An advertisement* in the daily press warns us that these Lectures to working men are to be discontinued, and so we are disappointed of the hope of a similar course, illustrated by practical examples, on Mechanics, in which, to employ the author's words, the occult phenomena described by the writers of cram-books on Mechanics to be used in preparing for certain examinations will find no place. Each exercise will fix firmly in the mind of the student the fact that a certain principle is of importance outside examination rooms; and the student, when he works out an answer which every practical illiterate mechanic knows to be ten times too great, will not complacently rest satisfied with this absurd answer, and talk about its being "theoretically" right.

The author has dared to introduce a lecture on Vectors and their use and treatment—that is, Quaternions in their simplest form, *pace* Prof. Tait. The resolution and composition of directed quantities follows in a simple manner, on a railroad of mathematical argument, without blowing up any culverts and bridges by such artificial obstructions as Duchayla's demonstration of the Parallelogram of Forces.

The ideal treatise is the judicious combination of the Inwit and Outwit. These Lectures, in their assigned scope of immediate practical application, work as far as possible on the Outwit principle, while there are tendencies in the world of abstract mathematics to exclude Outwit as far as possible, and to proceed entirely by Inwit; and this latter method interests and commends itself to the philosophic contemplative mind. Thus an increasing gap is arising between the two lines of thought, as the man of action must proceed at once on the available rational theory; and he will incline to the treatment advocated with so much eloquence in these Lectures on Practical Mathematics. A. G. GREENHILL.

A SYSTEM OF MEDICINE.

A System of Medicine by Many Writers. Edited by Thomas Clifford Allbutt, M.A., M.D., LL.D., F.R.C.P., F.R.S. Vol. v. Pp. xiv + 1056. 71 illustrations; 7 charts; 3 plates. Vol. vi. Pp. xi + 944. 44 illustrations; 3 plates; 2 tables. Vol. vii. Pp. xii + 937. 34 illustrations; 3 plates. Vol. viii. Pp. xii + 998. 16 illustrations; 3 plates. (London: Macmillan and Co., Ltd., 1898-1899.)

PROF. CLIFFORD ALLBUTT is to be congratulated upon having completed what must have been a Herculean task. In a science which changes with the velocity of medicine, the time consumed in the appear-

ance of a work is a very important factor. It is quite conceivable that during the period that must necessarily elapse between the first and the last volume of so monumental a work some discovery in medicine, or the cognate sciences of transcendental importance, might occur. Such a discovery might affect equally profoundly both the written and unwritten volumes. A system thus astride an epoch-making advance in the subject-matter of its theme might bring the editor into serious embarrassment. In this respect the lot of the present system has fallen in pleasant places. It has been launched into the tide of medical literature without any such contretemps, and the first volume may be considered, from the practical standpoint, as much up-to-date as the last.

In the space at our command it is of course impossible even to enumerate the contents of the four massive volumes before us.

Vol. v. is devoted to diseases of the respiratory and circulatory systems. Dr. Ewart writes two comprehensive articles on bronchitis and bronchiectasis. The monograph on pneumonia is from the pen of Dr. Pye Smith. This article contains an interesting critique of the bacteriology of pneumonia from the standpoint of the physician, and concludes with copious clinical statistics. Dr. Percy Kidd contributes a succinct account of consumption, and what must be regarded as a very fair *résumé* of the different methods of treatment and their results. Dr. Goodhart writes an able account of that enigmatical disease, asthma.

The second part of the volume treats of diseases of the circulatory system. The first three articles of this subdivision are of general interest. Sir Michael Foster contributes an essay on the general features of the blood. The clinical examination of the blood is fully dealt with by Dr. Copeman. In this article the massive literature of this subject is well condensed, no easy task; the essay is well up-to-date, and should prove most useful in conjunction with its copious and well-classified bibliography, not only to those who are simply interested in the subject, but to actual workers in the field. Prof. Sherrington has condensed much matter into little volume in his article on cardiac physics. What to leave out, and what to put in, in an article upon this subject, in this place, must be a matter of very great difficulty. We think the absolute value of the article has suffered somewhat from its condensation, and that more space should have been devoted to this subject. The physical and physico-chemical aspect of dropsy, which has received very scanty attention elsewhere, might well have been included in it. Functional disorders and mechanical strain of the heart are treated of at length by the editor. Here (p. 847), we notice a misprint; Prof. Zuntz' collaborator was Geppert, not Goppert. The volume concludes with articles on endocarditis and valvular disease.

In vol. vi. diseases of the circulatory system are continued. Sir Richard Douglas Powell contributes a full account of angina pectoris. After a preliminary division of the cases into two main classes, the author proceeds to give clinical examples. The article concludes with a consideration of prognosis and treatment. Dr. F. T. Roberts writes upon diseases of the mediastinum and thymus gland. The greater part of the author's space is devoted to the interesting and complicated

subject of intra-thoracic new growths, which he handles in a most satisfactory manner. The articles on thrombosis and embolism are from the pen of Prof. Welch, and are treated very fully. A most copious bibliography is appended, amounting to six pages.

An interesting illustration of the essential unity of the nerve muscle machine is afforded by a study of the editor's attempt to consider in two separate sections diseases of the muscles and diseases of the nervous system. How far one can divide, from the standpoint of disease, the neuro from the muscular element is naturally of interest. As a matter of fact, however, it is to be noted that, whereas the division between these two classes of diseases in the general page of contents takes place between the articles upon facial hemiatrophy and general pathology of the nervous system, in the text this is not so, the division occurring between the articles upon erythromelalgia and diseases of the nerves. This may be due, of course, to accident; at any rate, it should be cleared up.

In the section devoted to diseases of the muscles, Prof. Sherrington contributes a most interesting article upon tremor, tendon-phenomenon and spasm, and Dr. Bevan Lewis one on the general pathology of the nervous system.

Space equivalent to two whole volumes or rather more is devoted to diseases of the nervous system, and the various articles upon the different subjects in this section are very complete. A few monographs are to be found here and there, in appropriate places, upon the general physiology and pathology of the subject. Noteworthy amongst these is Dr. Ferrier's essay upon the regional diagnosis of cerebral disease. In it the chief parts of the brain are considered seriatim, the effect of lesions of them described, some clinical cases given, and a bibliography appended to each section. This latter method will greatly facilitate reference, and might with advantage have been adopted in other instances. Dr. Bastian contributes an able essay upon aphasia and other speech defects. Hysteria forms a subject of an interesting monograph by Dr. Ormerod. The author discusses at some length the hypotheses of hysteria, and criticises the psychical speculations of Janet. Neurasthenia is treated of at length by the editor. He defends the entity of the disease, describing different forms of it according to the organ or set of organs presenting functional aberration. Prof. Victor Horsley writes upon traumatic neurasthenia. Under this term cases of nervous disturbance after railway accidents and other agencies producing sudden fear or emotion, &c., are considered. The article should prove useful to the medical advisers of railway companies; it concludes with a suggestive paragraph upon malingering and points of medical jurisprudence.

A section, occupying some four hundred pages, is devoted to mental diseases. In the editing of this section Prof. Allbutt has been assisted by Dr. Savage. Dr. Mercier contributes a philosophical article upon vice, crime and insanity. The volume concludes with a series of essays upon diseases of the skin. A short appendix, comprising an account of the recent researches on the malarial parasite, has been wisely added to supplement Prof. Osler's article on malaria in vol. ii.

The editor and his collaborators must be immensely

relieved that so prolonged an effort has finally terminated. The fact that the system is somewhat more bulky than was originally intended can scarcely be considered a disadvantage. Portability is hardly expected of a "system"; further, Prof. Allbutt's work, taking in regard the voluminous increase which has occurred in medical literature in the interim, compares favourably, in so far as bulk is concerned, with its predecessor. It is sincerely to be hoped, and indeed expected, that the book will meet at the hands of the profession with that success which it richly deserves.

F. W. TUNNICLIFFE.

THE NATURAL HISTORY OF WHALES.

A Book on Whales. By F. E. Beddard, M.A., F.R.S. With 40 illustrations by W. Sidney Berridge. Pp. xv + 320. (London: John Murray, 1900.)

THE editor of the "Progressive Science Series," Mr. Beddard, has undertaken the preparation of the volume "On Whales." Amongst the mammalia, no order is more remarkable than the Cetacea. The huge size, both in length and bulk, attained by many of the species, their fish-like habitat, the modifications in mammalian structure necessary to adapt them for a life in the water, and the difficulties attendant on their capture, have invested them with an interest which appeals to the popular imagination as well as to the naturalist. In writing this book, Mr. Beddard has had in view the compilation of a volume which, whilst based on scientific lines, should be expressed in language divested as far as possible of technicalities, so that the descriptions might be understood by educated persons generally. In this respect he has succeeded.

In the earlier chapters he describes the most characteristic features in the external form and in the internal structure of whales, and he compares them with other aquatic mammals. In their size, such species as *Balaenoptera musculus* and *B. sibbaldii* are not only the largest of living mammals, but there is no evidence of animals having in past times existed which possessed a greater magnitude, the most gigantic extinct Saurian reptile, or even the *Iguanodon*, dwindling into insignificance beside these monsters of the deep. The skeleton in the largest species, more especially the skull and spine, is characterised by the bulk of the bones. There seems to be a relation in the thickness of the tegumentary blubber and the quantity of its contained oil to the weight of the bones. In the Greenland Whale the individual bones are much heavier in relation to their size than in the *Balaenopteridæ*, and the blubber is so much thicker in the former, that a *Balaena mysticetus*, without taking into account the much greater value of its whalebone, and estimating only that of its oil, repays the whaling seaman much more than the capture of *Sibbald's Whale*, although the latter may be from 20 to 30 feet longer. In the *Sperm Whale*, again, in addition to the valuable oil in the blubber, the cavity in its huge head contains many gallons of the peculiar fat, which, when solidified after the death of the animal, forms the well-known commercial article called spermaceti. The fat with which these animals are so abundantly provided, being of much less specific gravity than the